FIRECLASS BACnet converter

Part No. 557.202.135

Fig. 1: UC-7101 computer

This guide leads you through the process of creating and implementing configurations for the FIRECLASS BACnet Interface.

This must always be carried out as follows:

- As part of a new FIRECLASS BACnet interface installation.
- After the BACnet Converter (Moxa device) firmware has been updated.
- When there is a new issue of the BACnet Configurator program (see below).

  This will automatically make corrections, for example to the BACnet IDs in the various 'Value' columns (see below).

You must have first installed the FIRECLASS BACnet Interface, as described in the installation guide. The installation guide also provides an introduction to the interface.

To create or update a configuration

1 Locate a PC running FIRECLASS Express. It will be easier if this is the same PC used for the BACnet Converter installation.

  Start FIRECLASS Express and open the project file (*.PJQ) containing the fire alarm control panel configuration.

2 Check that the processing capacity of the Moxa interface device will not be exceeded. Each device can interface around 2.000 points to BACnet. These may be located on different panels. For more points, a second Moxa device is needed.

3 In FIRECLASS Express, export to FCG. For details refer to the FIRECLASS Express help.

  You specify a path and name for an export file. Place this in a suitable project folder. The file will contain configuration details of the FIRECLASS fire alarm system (such as the zones and points).

4 Locate the BACnet Converter installation PC. On this PC navigate to the following BACnet Configurator executable, and open it (this is the path suggested in the installation guide):

  C:\Program Files\FIRECLASS_BACnet_x_yy\BACnet-Configurator.exe

5 To start a new BACnet configuration, skip to Step 6.

  Or you might want to update an existing saved configuration in a .BNP file. To do this, use **File ► Open**, navigate to the .BNP file and open it.

  Now go to the General tab and click **Update**. Then navigate to the exported XML file and open it (you might need to copy this file across from the FIRECLASS Express PC).

  The configuration settings from the XML file are now compared to the existing BACnet configuration settings. Any changes between the two are merged as follows:

  – If loop points have been set to Empty in the XML file, they will be deleted from the BACnet IF configuration.

  – If loop points or zones have been added in the XML file, they will be inserted into the lists and their BACnet ID will be initialized with 'none'.

6 To start a new BACnet configuration switch to the **General** tab and click **Load**. Now navigate to the exported XML file and open it.

7 Make your BACnet Converter configuration settings. For details see the section "Making the Settings" below.

8 Use **File ► Save** or **File ► Save As...** to save to a .BNP file of your choice.

To copy the configuration to the Moxa device

1 Connect the BACnet configuration PC to the Moxa device, using the crossover Ethernet cable supplied with the device.

2 Open a Command Prompt window (**Start** menu ►**All Programs ► Accessories ► Command Prompt**). Enter the command:

  telnet 192.168.3.127

  where "192.168.3.127" is the IP address of the Moxa device. Use the new address if you have changed this.

If you are asked for a username, skip to Step 5.

Or the connection may fail. In this case your PC probably has incompatible IP settings, so carry on at the next step (this provides an example method of how to connect with the default Moxa device IP settings).

3 On the PC, go to the "Local Area Connection" settings, "Internet Protocol (TCP/IP) Properties".

Note the setting for "IP address", so you can return to it later. Then set this to **192.168.3.1**.

Note the setting for "Subnet mask", so you can return to it later. Then set this to **255.255.255.0**.

4 Repeat the "telnet 192.168.3.127" command.

5 After a successful connection of the "telnet" command enter the username of **root**. At the password prompt, also enter **root** (the password does not appear as you type).

6 Enter the command sequence:

cd /home*

sh ./install

(Take care to enter the sequence exactly as shown, the "*" characters are important. As a shortcut, you could copy and paste the text above, using right-click menu options.)

7 Note the reported hardware ID string for the next step. Then enter the telnet command "**exit**".

8 Switch back to the BACnet Configurator, and go to the "**General**" tab.

Enter the hardware ID string into the Code box.

Subsequently, click on **Generate configuration file...** , and specify a suitable project folder for the file (for example, the BACnet installation folder).

The file is saved as **configuration.BACnet**. If you encounter an error, it is probably because you had forgotten to insert the hardware ID string, (see Step 7).

9 In the BACnet Configurator "**General**" tab, click on the **Send 2 Moxa** button. This will transfer the configuration to the Moxa device with the same IP address as configured under "`General Tab > IP Addr`". The default IP address of the Moxa device is 192.168.3.127.

10 To repeat the transfer of the configuration, navigate to the project directory and run the (new) Windows shell file '**Send2Moxa_ProjectName.bat**'.

11 Reboot the Moxa device (power down and up again).

12 The software installation is complete. Ensure that you revert to the original IP Settings (if changed).

Making the Settings

This section provides information on making the settings in the various tabs of the BACnet Configurator. This section just explains the variously possibilities which are available in the BACnet IF Configurator. Please refer further down where every tab is described in detail.

The settings must be written into the BACnet project .BNP file. This stores the settings for future use. In addition, this file must be present before the configuration can be transferred to the Moxa device (see above).

Panels, Zones and Point Tabs

Initially no FIRECLASS points will be interfaced to BACnet, so the columns of the tabs will contain the following:

- "none", where the associated device can provide analogue values.

"--" where the device does not provide an analogue value, only a state.You need to interface the required points as described below (not all points will necessarily need to be interfaced). The procedure is the same for all tabs.

To interface an FIRECLASS point

1 From the row and column headings, decide on a cell you want to interface to BACnet. This will be a cell containing '**none'**.

Alternatively you can select a range of cells, rather than a single cell. For details see the section below.

2 Right-click on the '**none'** entry.

This will replace 'none' with the BACnet ID. Right-click again if you want to switch back to 'none'.

Multiple Selection

As mentioned in Step 1 of the procedure "To interface an FIRECLASS point", you can make multiple selections. To do this you can use the following methods:

- Click to select a cell, then **shift-click** on another cell. All the cells between the two will be selected.
- Click on a cell, then **Ctrl-click** on any other additional cells you want to select.
- Click on the fist column in one row to select all the cells in the row. **Ctrl-click** on any additional row or cells you want to select.
- Click on the column header to select all the cells in the column. **Ctrl-click** on any additional columns or cells you want to select.
- A click on a header will sort the column. Depending on the content of the column the sorting will be either a numerical or an alphanumerical order. A second click on the header will reverse the order.

Configuration Settings Details

The sections below provide details information on each of the Configurator settings.

Project Details tab Settings

Project Name display the FIRECLASS Express project name.

Project Description allows a customer to add comments and hints about this BACnet project as free and unformatted text. It is pre-filled with the FIRECLASS Express revision number, when the xml export file has been loaded or updated.

Template Language is used to define the control group numbers for some commands. Either set it to English or German. In this case fixed control group numbers will be used in the BACnet IF. The third setting 'manual' allows to choose other control group numbers than normally used in FIRECLASS Express.

General tab Settings

This tab takes all relevant settings of this BACnet project.

Danger of corruption

There is a danger of corrupting the FIRECLASS network.

To avoid this be careful when making the **General** tab settings, and make sure they correspond to the project configuration.

Control	Meaning	Comments
Project File		
Exported ".XML" file	The path and file name of the FIRECLASS Express exported XML file.	Create the .XML file in FIRECLASS Express, by exporting to FCG. See the FIRECLASS Express help file for details.
Load... button	Loads information from the FIRECLASS Express export file.	Used when creating a new BACnet IF configuration.
Update... button	Updates with information from the FIRECLASS Express export file. (Except the correction of device types that do not provide all "Value 1,2, and 3" or "Dirtiness" values – see the section "Points tab Settings" on page 10.)	BACnet ID references are not affected and remain the same.
Protocol Configuration		
Protocol version	Supported by the BACnet interface are the Protocol versions 3.0, 4.2, 5.0, 5.1 and 5.2.	This setting must be the same as configured in FIRECLASS Express set to version 5.2.
Database version	The revision number from FIRECLASS Express' database.	This number should be used to identify a change in the project data of FIRECLASS Express. If the number here and in FIRECLASS Express are not the same, then an update of the BACnet IF configuration is needed. The XML file should be re-exported from FIRECLASS Express, then read again using the 'Update.." button.
Connector's node	The FIRECLASS "N" node number from the **Site Details** dialog in FIRECLASS Express.	This setting must be the same as configured in FIRECLASS Express.
Master Node	Supervising control panel of the FIRECLASS network. As set in the **Site Details** dialog in FIRECLASS Express.	
Card Type	Select TLI800EN.	Please update the TLI800EN firmware to 1.1 and configure the last value. Older TLI800 and TLI800EN with old firmware will need setting 'TLI800[EN 1.0]'.
Time keeper	The node number of the time keeper in the FIRECLASS network.	This is taken from the XML device list file and is not editable. The BACnet IF control panel can be configured to be the time keeper in FIRECLASS Express.
Use logical address	Fixed to "no".	
Refresh	Refresh frequency (in seconds) of analogue values for FIRECLASS points (such as temperature, dirtiness, and so on).	This is used if any analogue values are presented to BACnet. This value must be at least 300 seconds. Please take into account, that every FIRECLASS panel is able to answer 2,5 requests per second. So this Refresh value should be greater than "number of points" / 2,5.
Eventlog Server/ EVs since Reset	This is experimental. Please do not tick this.	

Table 1: General tab details

Control	Meaning	Comments
Serial Port		
Name	Device name of the serial port inside the Moxa device. Default value: **/ dev/ttyM0**	Do not change this.
Baud rate	TLI800EN supports all offered values. Please use the highest baudrate, which does not cause communication faults (seen in the log console).	The baud rate must be the same as configured by dip-switches on the TLI800EN card.
Data Bits		Not editable.
Parity		Not editable.
Stop Bits		Not editable.
BACnet		
BACnet ID	BACnet ID of FIRECLASS converter. Must be unique across the whole BACnet network.	Set any unique value. According to BACnet specification it can be up to 4194303. (However normally this value does not need be to be changed.)
Network	BACnet network of FIRECLASS converter. Must be unique in whole BACnet networks.	Set any unique value. According to BACnet specification it can be up to 65535. Normally this value does not need be changed.
Restart password	This password enables (warm) resetting of the FIRECLASS system/ network	Please change the default.
Time offset to UTC	FIRECLASS converter time offset (in minutes) to GMT. Values <0 means east direction (i.e Europe, Asia), values >0 means west (i.e Americas)	
BACnet APDU		
APDU Timeout	The time when an APDU will time out.	Only change this value, when instructed by support.
Segment Timeout	The time when an APDU segment will time out.	Only change this value, when instructed by support.
APDU Retries	The number of repeats when an APDU must be re-sent.	Only change this value, when instructed by support.

Table 1: General tab details (cont.)

Control	Meaning	Comments
IP Network		
Manual Configuration	If ticked, then the following settings can be edited.	Both the converter and connector functions normally run on the same Moxa device. For large systems these functions can be split and run on separate Moxa devices.
Converter IP	IP address of the Moxa device.	Default: localhost
Converter Port	UDP port of the Moxa device.	
Connector IP	IP address FIRECLASS Connector.	Default: localhost
Connector Port	UDP port of FIRECLASS Connector.	
PTP parameters (for TLI) (Only visible, when using a TLI800[EN] network card)		
Network Baud Rate	'use switches' is the preferred setting.	Do not change.
Network Wiring Style	'use switches' is the preferred setting.	Do not change.
Segment Address	Just displays the value.	
Network Ring Delay	Set according to the Peer Limit values as shown in Table 2.	
Network Peer Limit	Maximum network node number including head-end system.	
Network Idle Time	Set according to the Peer Limit values as shown in Table 2.	
Network Slot Time	Set according to the Peer Limit values as shown in Table 2.	
Network Reply Timeout	Set to '25'.	
Network Reply Retry	Set to '3'.	
Network Broadcast Repeat	Set to '3'.	.
Network No Token Timeout	Set to '500'.	
Network Token Timeout	Set to '52'.	
PTP ACK timer	Set to '3'.	
Code	The string created during installation of the binary files in the Moxa device.	If necessary re-run the **sh ./install** command on the Moxa device to obtain the hardware ID string, as described in the installation guide.
Generate configuration file	Generates the file **configuration.BACnet**. See Step 8 on Page 2 for details.	Please refer to the installation instructions PDF file.
FTP: **Send 2 Moxa** button	See Steps 9 and 10 on Page 2.	

Table 1: General tab details (cont.)

Hidden settings

Note that there is a section in the GUI for making PTP settings. This section is normally hidden, but becomes visible when loading an FIRECLASS Express project where a TLI800EN network card is used. The names of the PTP parameters are the same as used in FIRECLASS Express – the same settings must be made as in FIRECLASS Express (otherwise incorrect operation of the entire networked system could result).

Peer Limit

Table 2 lists the values for Peer Limit.

Peer Limit	Idle Time	Ring Delay	Slot Time
1-26	3	3	16
27	3	4	17
28	3	4	17
29	3	4	17
30	3	4	17
31	3	4	17
32	3	4	17
33	3	4	17
34	3	4	17
35	3	4	17
36	3	5	19
37	3	5	19
38	3	5	19
39	3	5	19
40	3	5	19
41	3	5	19
42	3	5	19
43	3	5	19
44	3	5	19
45	3	6	21
46	3	6	21
47	3	6	21
48	3	6	21
49	3	6	21
50	3	6	21
51	3	6	21

Table 2: Values for "Peer Limit" dependant PTP Parameters

Peer Limit	Idle Time	Ring Delay	Slot Time
52	3	6	21
53	3	6	21
54	4	7	23
55	4	7	23
56	4	7	23
57	4	7	23
58	4	7	23
59	4	7	23
60	4	7	23
61	4	7	23
62	4	7	23
63	4	8	25
64	4	8	25
65	4	8	25
66	4	8	25
67	4	8	25
68	4	8	25
69	4	8	25
70	4	8	25
71	4	8	25
72	5	9	27
73	5	9	27
74	5	9	27
75	5	9	27
76	5	9	27
77	5	9	27
78	5	9	27
79	5	9	27
80	5	9	27
81	5	10	29
82	5	10	29
83	5	10	29
84	5	10	29
85	5	10	29
86	5	10	29
87	5	10	29
88	5	10	29

Table 2: Values for "Peer Limit" dependant PTP Parameters

Peer Limit	Idle Time	Ring Delay	Slot Time
89	5	11	31
90	6	11	31
91	6	11	31
92	6	11	31
93	6	11	31
94	6	11	31
95	6	11	31
96	6	11	31

Table 2: Values for "Peer Limit" dependant PTP Parameters

Peer Limit	Idle Time	Ring Delay	Slot Time
97	6	11	31
98	6	12	33
99	6	12	33

Table 2: Values for "Peer Limit" dependant PTP Parameters

Panels tab Settings

This tab lists all panels, which have been configured and imported from FIRECLASS Express.

The following columns are provided:

Column	Meaning	Comments
Panel (node)	Panel number	Address of panel in FIRECLASS Network.
State	BACnet address of state of panel. It can be: normal or alarm. It also provides flags about fault and isolation/deisolation.	If present then state will be presented to BACnet.
Silence	BACnet address of silence/resound info. It shows that sounders are silenced or not. This BACnet address accepts commands and allows to silence/resound panel.	It is NOT information of sounding or not. It's info about readiness to sounding or silenced sounders.
Sounders On/Off	BACnet address of info about sounders switched off. It is NOT information about sounding or not. This BACnet address is accepts commands and allows to switch off sounders or become sounders to ready.	German based templates only. In other templates this function is not used.
Evacuate	BACnet address of info about evacuating panel (the evacuation state). It accepts commands.	If present then the evacuation state will be presented to BACnet.
Description	Description of panel.	Taken from FIRECLASS Express

Table 3: Panels tab details

Zones tab Settings

This tab lists all zones, which are imported from FIRECLASS Express.

The following columns are provided:

Column	Meaning	Comments
Panel (node)	Panel number for given zone.	
Zone ID	Physical zone number.	
State	BACnet address of state of zone. It can be normal or alarm. It accepts commands and allows to make isolation (out-of-service) or deisolation of zone. It provides flags about fault in zone.	If present then state will be presented to BACnet.
Description	Description of given zone. It'll be replaced during upgrade.	Taken from FIRECLASS Express

Table 4: Zones tab details

Points tab Settings

This tab lists all points, which are imported from FIRECLASS Express. The following columns are provided:

Column	Meaning	Comments
Panel (node)	Panel number of point.	
Human Address	The physical point address in a human-readable format.	
Ch.	Channel address of the point. A "0" value relates to a point on the main board (that is a loop or XBUS point). A "1" value relates to an RBUS point.	
Ch.A	If "Channel" is "0", the items this relates to are as follows: 0=XBUS, 1=loop A, 2=loop B, 3= loop C and so on. If "Channel" is "1" then this relates to an RBUS address.	
Cat.	For loop points this is always "0" (Real). For XBUS points this is "2".	
Pt.	Point address.	
Type	The type of the device.	
Zone	Point zone.	
State	BACnet address of state of given point. It accepts commands and allows to isolate (out-of-service) and de-isolate point. It also provides flags for fault.	If present then state will be presented to BACnet.
Value1, Value2, Value3	BACnet address of analogue value read from given point. If unit is provided by FIRECLASS panels then it'll be properly set on BACnet.	Please note that not every FIRECLASS panel provides this kind of data. FC460PH provides value1 and value2. FC420CP none of them. HINT: It is not allowed to configure to retrieve values from more than 100 FIRECLASS points in total.
Dirtiness	BACnet address of dirtiness read from detector.	Please note that not all points provides this kind of data. HINT: It is not allowed to configure to retrieve values from more than 100 FIRECLASS points in total.
Description	Description of point (primary language). It'll be replaced during upgrade.	Taken from FIRECLASS Express

Table 5: Points tab details

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